

REMARKS

The present amendment is intended to be fully responsive to all points of rejection raised by the Examiner, and is believed to place the application in condition for allowance.

Claims 16 – 31, 35 – 39, 42, 70 – 73, 89 – 113, 115 – 131, and 147 – 178 are pending in the present application.

Claims 22 – 27, 42, 70, 73, 92, 110, 113, 150 – 153 and 166 – 169 are currently amended.

Claims 1 – 15, 32 – 34, 40, 41, 43 – 69, 74 – 88, 114, and 132 – 146 are canceled without prejudice or disclaimer.

No new matter has been added. Support for the amendments can be found, *inter alia*, in Figs. 6 – 8 & 15A – 15E, and in the written description at page 31, line 13 - page 33, line 28.

Favorable reconsideration and allowance of all claims under consideration is respectfully requested.

Claims Objections

Claims 22- 27, 31, 92, 95, 150 – 154 and 166 – 170 stand rejected under 35 U.S.C. §112 as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

Regarding claims 22 – 25, and 27, the term “non-scanning optical array” has been amended to “staring array optical sensor”, which has antecedent basis in claim 16, from which these claims depend.

Regarding claims 92, 150 - 153, and 166 – 169, the term “non-scanning optical array” has been amended to “staring array camera”, which has antecedent basis in claim 89, from which these claims depend.

Referring to claims 23 and 151, the modifying term “of a similar order” has been deleted.

Referring to claims 25, 26, 153, 154, 169 and 170, Applicants respectfully traverse this rejection. These claims require that none of the orders of diffraction that may be produced by the diffraction pattern impinge on the staring array optical sensor or camera. In other words, arrangement of the staring array optical sensor or camera is arranged such that orders of diffraction that may result from illumination of the substrate do not impinge on the sensor or camera, but rather elsewhere.

Claims 26, 31, 95, 151, 154 and 170 are dependent claims each of which inherited a §112 rejection from the claim or claims from which each it depends. Applicants respectfully submit that rejection of the respective base claims has been remedied, and therefore rejection of claims 26, 31, 95, 151, 154 and 170 is obviated.

In view of the foregoing, Applicants respectfully request that the Examiner withdraw these rejections of claims 22- 27, 31, 92, 95 150 – 154 and 166 – 170.

Claims Rejections – 35 U.S.C. §103 – Fukazawa

Claims 70 – 73 and 110 – 113 stand rejected under 35 U.S.C. §103 (a) as being unpatentable over Fukazawa, et al. U.S. Patent No. 6, 654,113. Applicants respectfully traverse the above rejection as applied to each rejected claim.

Fukazawa describes surface inspection apparatus that obtains images of a test piece by capturing images of the test piece with an image-capturing device while varying at least one condition (e.g. wafer tilt angle).

Claim 70 has been amended and includes *inter alia* the following distinguishing recitation:

an inspection region;
an illuminator configured to selectably illuminate a substantially planar surface of an article located in the inspection region with one of at least two

predetermined configurations of illumination, a first configuration of illumination providing dark field illumination and a second configuration of illumination providing bright field illumination;

an image acquisition sub-system comprising at least one camera having a two dimensional field of view for acquiring images of generally the entire surface of the article when illuminated by at least one of said predetermined configurations of illumination; and

an image analysis subsystem for computer analysis of the images and detecting anomalies in the surface as a function of variations in reflected intensities of illumination.

As noted above, Fukazawa describes surface inspection apparatus that obtains images of a test piece by capturing images of the test piece with an image-capturing device while varying at least one condition (e.g. wafer tilt angle). Nothing, however, in Fukazawa shows or suggests an illuminator being configured to selectably illuminate a surface with one of at least two predetermined configurations of illumination, of which a first configuration of illumination defines dark field illumination and a second configuration of illumination defines bright field illumination. Applicants respectfully submit that this deficiency is not remedied by other prior art taken in combination with Fukazawa. In view of the foregoing, Applicants respectfully request that the Examiner withdraw this rejection of claim 70.

Claims 71 and 72 depend from claim 70. Inasmuch as claim 70 is deemed patentable, Applicants respectfully submit that claims 71 and 72 are also patentable. Applicants respectfully request that the Examiner withdraw this rejection of claims 71 and 72.

With respect to claim 73, Claim 73 has been amended and includes *inter alia* the following distinguishing recitation:

a coating generator operative to generate a coating on a surface of the article;

an illuminator configured to selectably illuminate said surface bearing said coating with one of at least two predetermined configurations of illumination, a first configuration of illumination providing dark field

illumination and a second configuration of illumination providing bright field illumination;

an image acquisition sub-system comprising at least one sensor having a two dimensional field of view for acquiring images of generally the entire surface of the article for each combination of illumination; and

an image analysis subsystem for analyzing the images and detecting anomalies in the surface on the basis of variations in reflected intensities of illumination.

As noted above, Fukazawa describes surface inspection apparatus that obtains images of a test piece by capturing images of the test piece with an image-capturing device while varying at least one condition (e.g. wafer tilt angle). Nothing, however, in Fukazawa shows or suggests an illuminator configured to selectably illuminate a coated surface with one of at least two predetermined configurations of illumination, a first configuration of illumination providing dark field illumination and a second configuration of illumination providing bright field illumination. Applicants respectfully submit that this deficiency is not remedied by other prior art taken alone or in combination with Fukazawa. In view of the foregoing, Applicants respectfully request that the Examiner withdraw this rejection of claim 73.

With respect to claim 110, Claim 110 has been amended and includes *inter alia* the following distinguishing recitation:

- a) defining an inspection region;*
- b) sequentially illuminating a surface of an article located in the inspection region with at least two predetermined configurations of illumination, a first configuration of illumination providing dark field illumination and a second configuration of illumination providing bright field illumination;*
- c) acquiring images of the surface of the article when illuminated by at least one predetermined configuration of illumination using at least one staring array camera;*
- d) moving said article or said camera so that a next part of said surface is located in said inspection region and repeating operations (b) & (c) until images of substantially all of said surface are acquired; and*
- e) analyzing the images and detecting anomalies in the surface as a function of variations in reflected intensities of illumination.*

As noted above, Fukazawa describes surface inspection apparatus that obtains images of a test piece by capturing images of the test piece with an image-capturing device while varying at least one condition (e.g. wafer tilt angle). Nothing, however, in Fukazawa shows or suggests sequentially illuminating a surface of an article located in an inspection region with at least two predetermined configurations of illumination, a first configuration of illumination providing dark field illumination and a second configuration of illumination providing bright field illumination. Applicants respectfully submit that this deficiency is not remedied by other prior art taken alone or in combination with Fukazawa. In view of the foregoing, Applicants respectfully request that the Examiner withdraw this rejection of claim 110.

Claims 111 and 112 depend from claim 110. Inasmuch as claim 110 is deemed patentable, Applicants respectfully submit that claims 111 and 112 are also patentable. Applicants respectfully request that the Examiner withdraw this rejection of claims 111 and 112.

With respect to claim 113, Claim 113 has been amended and includes *inter alia* the following distinguishing recitation:

generating a coating on a surface of the article;

sequentially illuminating said surface bearing said coating with at least two predetermined configurations of illumination, a first configuration of illumination providing dark field illumination and a second configuration of illumination providing bright field illumination;

acquiring images of the surface of the article for each combination of illumination using at least one staring array sensor; and

analyzing the images and detecting anomalies in the surface on the basis of variations in reflected intensities of illumination.

As noted above, Fukazawa describes surface inspection apparatus that obtains images of a test piece by capturing images of the test piece with an image-capturing device while varying at

least one condition (e.g. wafer tilt angle). Nothing, however, in Fukazawa shows or suggests sequentially illuminating a coated surface with at least two predetermined configurations of illumination, a first configuration of illumination providing dark field illumination and a second configuration of illumination providing bright field illumination. Applicants respectfully submit that this deficiency is not remedied by other prior art taken alone or in combination with Fukazawa. In view of the foregoing, Applicants respectfully request that the Examiner withdraw this rejection of claim 113.

Allowable Subject Matter

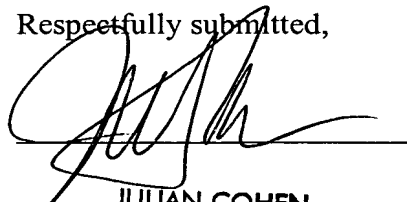
Applicants note with appreciation that claims 16-21, 28-30, 35-39, 42, 89-91, 93, 94, 96-109, 115-131, 147-149, 155-165, 171-178 are deemed allowable.

Conclusion and Request for Interview

In view of the foregoing, this application is believed to be in order. Reconsideration and allowance of this application are respectfully solicited.

If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly invited to contact the undersigned attorney at the telephone number listed below.

Respectfully submitted,



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